ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY, BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

October 25, 1960
Vol. 24...No. 6

Dear Sir:

First British nuclear-powered submarine, the Dreadnought, was launched last week at naval construction works of Vickers-Armstrong Shipbuilders Ltd., Barrow-in-Furness. Launching marked two years of cooperative U.S.-British program during which U.S. furnished Dreadnought's complete nuclear propulsion system and trained over 100 staff members of the British Admiralty, Rolls-Royce Ltd., and Vickers-Armstrong in design and construction of the plant. Prime contractor on procurement of the nuclear plant and staff training was Westinghouse Electric Corp., through its special atomic project department, with Electric Boat division of General Dynamics Corp. assisting in this training and equipment procurement. (Other REACTOR NEWS, p.4 this LETTER.)

Phosphate glass radiation dosimeters will be furnished U.S. Navy by Specialty Electronics Development Corp., Syosset, N.Y., under $525,000 contract the firm has received. The dosimeter, recording cumulative exposure to x-and gamma radiation, is worn as a pendant around the neck. The new contract is the Navy's first major production order for an improved version of this unit which has been under a continuing design and refinement program at Specialty Electronics for some years. (Other MANUFACTURERS' NEWS, p.2 this LETTER.)

Certain ceramic or metallic materials deposited on nuclear fuel particles can minimize release of fission products from the particles used in high-temperature gas-cooled reactors; techniques have been developed at Battelle Memorial Institute, Columbus, Ohio. John M. Blocher, Jr., of Battelle, at Electrochemical Society meeting in Houston last fortnight, described techniques for applying such dense uniform coating to nuclear particles. This involves chemical reaction of vapors at the surface of a fluidized bed of fuel particles. Dr. Blocher noted that an alumina coating allowed release of only one part per million of gaseous fission products formed during a 2.5% burn up of a uranium oxide fuel. (Other PRODUCT NEWS, p.3 this LETTER.)

Newly formed affiliate of Nuclear Science and Engineering Corp., Pittsburgh, Pa., and Hazleton Laboratories, Falls Church, Va., is Hazleton Nuclear Science Corp., Palo Alto, Calif. A variety of services in the nuclear field is offered by the new company whose president is Harry L. Browne, formerly assistant to the general manager, General Atomic division of General Dynamics Corp. (Other BUSINESS NEWS, p.2 this LETTER.)

Nuclear power plant of U.S. Army at Camp Century, on the Greenland ice cap, is expected to be in full operational status in November. Initial criticality of the reactor was achieved early this month, and the plant is now undergoing low-to high-power testing preliminary to a 400-hour full power endurance run. Full power output of the plant is 1560 net kw of electricity plus 1000-lbs. of steam per hour for heating; it was built by Alco Products, Inc., Schenectady, N.Y. (Other REACTOR NEWS, p.4 this LETTER.)

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ATOMIC ENERGY FINANCIAL NEWS...

RECORD SALES FOR INSTRUMENT MANUFACTURERS: Sales of Nuclear-Chicago Corp., Des Plaines, Ill., were a record high of $6,398,516 for the company's fiscal year ended Aug. 31, 1960 compared with $5,147,238 for the like period last year. Net earnings were $523,891 or 74¢ a share on the 706,930 shares outstanding; previous year's earnings had been $532,896. Nonrecurring expenses, i.e., moving to a new plant, expansion of technical and marketing programs, etc., had reduced current year earnings in the first six months but laid foundation for record earnings of the final six month period, James M. Phelan, board chairman, told his shareholders. Research and development expenditures during the current fiscal year were at the highest level in the firm's history. Four major new products were introduced late in the fiscal year for the laboratory markets, while twelve new laboratory devices will be announced shortly. Mr. Phelan noted that some combinations currently under discussion with other companies would, if completed, further strengthen Nuclear-Chicago's position.

Beckman Instruments, Inc., Fullerton, Calif. manufacturer of electronic, nucleonic and other scientific instruments had record sales and possibly record earnings in the first quarter ended Sept. 30, 1960 of its current fiscal year, according to W. W. Wright, Beckman financial vice-president. Mr. Wright, speaking before the Boston Society of Security Analysts, said sales were almost $15 million in the quarter compared with $12,638,315 in the September quarter last year. For fiscal 1961, Mr. Wright predicted a sales rise of between 20% to 25% from the $54,257,282 in the fiscal year ended last June.

URANIUM PRODUCERS EARNINGS ARE LOWER: Net earnings for Denison Mines, Canadian uranium producer, were $4,022,000 or 90¢ a share during the third quarter of 1960 compared with $5,505,000 or $1.23 a share in the second and $4,977,000 or $1.11 a share in the first quarter. Two week plant shutdown during the third quarter for employee vacations reduced third quarter earnings to some extent. The company's working capital on Sept. 30, 1960 was $22,849,000 after debt retirement, dividends, etc. Long-term debt was $26,369,000 of which $1,399,500 is due Dec. 31, 1960.

Gunnar Mines, Canadian uranium mining and milling company, had net profit for the eight months ended Aug. 31, 1960 of $3,079,623 or 88¢ per share. For the first nine months of 1959 net earnings were $6,331,976 or $1.81 per share. The 8 month period saw Gunnar retire the last of its $19.5 million bond issue; the company is now debt free with current assets of $19.6 million or about $5.60 per share. Gunnar is now continuing production at an average rate of 2,000 tons per day, a milling rate it finds most economic to maintain although its results in some stockpiling. (Gunnar's original contract was for sale to Eldorado of $76,950,000 worth of precipitates. It has also bought contracts of Canadian Dyno and Rayrock which it is fulfilling.)

MERGER OF CANADIAN MINING COMPANIES APPROVED: Although private shareholders registered protests at the meeting held last fortnight in Toronto to amalgamate Lake Cinch Mines with New Dickenson Mines, the large block of shares held by management prevailed and the proposal was approved. Since the Lake Cinch shareholders are getting about 50¢ on the $1 as a result of the merger (this LETTER, Oct. 11, 1960) one shareholder asked why Lake Cinch couldn't be liquidated (it is an inactive Canadian uranium mining concern with cash and over $1 million in tax write-offs), and the shareholders allowed to buy New Dickenson stock on the open market. Another accused the directors of failing to act in good faith for the minority shareholders.

ATOMIC ENERGY BUSINESS NEWS...

URANIUM METAL TO BE PRODUCED IN JAPAN: Some 70 kg of high purity uranium ingot have been produced in pilot plant set up by Sumitomo Metal Mining Co. Ltd., the company states. The W. German firm, Degussa supplied technical assistance in constructing the plant. It is understood that Sumitomo Metal Industries Ltd., an associated company, will fabricate the metal into ingots and arrange for the in-pile tests at an available facility.

APPARATUS SALE MADE: Automatic counting system for measuring radioactivity, designed for Army Chemical Center, Md., has been delivered by Baird-Atomic, Inc., Cambridge, Mass. Housed in a 38 foot trailer, the installation consists of six gamma beta scintillation spectrometers with automatic sample changers. Each spectrometer is read out by an individual channel scanner on signal from a specially

NEW PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS: Portable device to collect radioactive and toxic dusts has filter for collecting 0.3-micron dust particles, and is said to operate with efficiency no lower than 99.97%. Flow rate is 154 cfm. of air. --Cambridge Filter Corp., 738 E. Erie Blvd., Syracuse 1, N.Y.

New amplifier-analyzer unit, Model 250, enables wide window integral gamma scintillation counting as well as standard integral and differential counting. The instrument can perform double tracer studies with two scalers by using the integral output for counting gamma rays above the upper level setting, while the lower energy gammas are counted differentially in the window. --Baird-Atomic, Inc., Cambridge 38, Mass.

New radiation survey meter, with transistor circuitry, is for measurement of alpha, beta, and gamma radiation. Using two standard flashlight batteries, it is said to be operational in temperatures ranging from 125 deg. F. to minus 22 deg. F., with an absolute accuracy of 15%. Built in loudspeaker and earphones permit choice of monitoring aurally, while visual monitoring is by two range meter reading 0-10 and 0-200 mr./hr. --Gelman Instrument Co., Chelsea, Mich.

PRODUCT NEWS: Uranium carbide shows promise of becoming an important nuclear fuel material because of its high uranium atom density, good thermal conductivity and good irradiation stability according to Herbert S. Kalish who addressed an American Society for Metals--Atomic Energy Commission Joint Conference last week in Philadelphia. Mr. Kalish is chief of nuclear metallurgy at metallurgical laboratories of Olin Mathieson Chemical Corp., New Haven, Conn. His paper on powder metallurgy fabrication of uranium carbide noted that a major problem is development of an economic method for fabricating the compound on a production basis that will result in the needed compositional control.

Uranium mononitride, uranium sulfide and uranium silicide are potential reactor fuels which it would be well worth studying and further investigating, R. F. Dickerson, of Battelle Memorial Institute, Columbus, Ohio told this Conference (as above). Mr. Dickerson, a reactor metallurgist, presented a report before the Conference critically evaluating all uranium compounds with the objective of choosing those which would produce the most return per research and development dollar invested. Because of the advanced state of their technology, uranium dioxide and uranium carbides were mentioned as having the greatest current potential. However, according to Dickerson, uranium mononitride, uranium sulfide, and the uranium silicides could well be developed into reactor fuels which would help provide economic nuclear power. Uranium beryllide, he noted, should also be considered worthy of a research and development investment even though it would be suitable only for use in a compact reactor system.

New ultra-high vacuum valve for nuclear and space research has been developed and successfully tested by RCA electron tube division of Radio Corp. of America, Lancaster, Pa. Developed under a USAEC contract, objectives were to provide a leak-proof seal for ultra-high vacuum applications. Some two feet wide and weighing over 280-lbs., a new and unique sealing technique is employed to enable it to remain vacuum tight at very low pressures. It has been tested in conjunction with a 10-in. mercury diffusion pump and two 2,000-liter liquid-nitrogen cold traps according to W. B. Parker and J. T. Mark of RCA whose paper describing the device was presented before meeting of the American Vacuum Society last fortnight in Cleveland.

New glass scintillator developed by the British Scientific Instrument Research Association is being marketed by Nash and Thompson Ltd., Surrey, England. This is an lithium alkaline earth silicate glass activated by cerium. Chemically inert, it can be used in contact with strong nitric acid solutions of radioactive material, i.e., when performing alpha particle analysis on such solutions. The company has added the new scintillator to its line of crystalline, plastic and liquid scintillators and scintillation purity chemicals.

Instruments and recorders built by Edgerton, Germeshausen & Grier, Inc., are used in the first experimental ground-based station in the U.S. for detecting nuclear detonations in near space. The equipment was developed by Los Alamos Scientific Laboratory under Project VELA, a program to improve means of detecting nuclear detonations in space and underground. The station is now operating on top of the building occupied by the USAEC's Los Alamos area office. (VELA is a joint project of the Advanced Research Projects Agency of the Defense Department, USAEC, National Aeronautics and Space Administration and other government agencies.)

NEW BOOKS & OTHER PUBLICATIONS...

Lead Isotopes in Geology. R. D. Russell, R. M. Farquhar. Useful reference for geologists interested in applications of isotopes. 243 pages. --Interscience Publishers, Inc., New York 1. ($9.00)

Isotope Index, 5th Edition. Lists source of every known commercially available isotope. 140 pages. --Scientific Equipment Co., Indianapolis 19, Ind. ($4.00)

List of References on Marine and Aquatic Radiobiology. Bibliography of some 442 references, compiled by A. W. Klement, Jr., and I. E. Wallen, USAEC division of biology and medicine. No. TID-3903. ($1.00).....Three Design Studies for Selecting a Prototype Reactor for a Nuclear Tanker. Combustion Engineering, Inc., considers pressurized water reactor; General Electric Co., indirect cycle boiling water reactor; and Westinghouse Electric Corp. direct cycle boiling water reactor. No. TID-8528. ($1.25) --Office of Technical Services, Wash. 25, D.C.

Atomic Energy Rules & Regulations; new and revised pages. Issued in loose-leaf form, subscription price of $4.50 includes the basic manual and supplementary material. Charge of $1 is made for foreign mailing. No. Y3. At 7:6-2/958. --Sup't. of Documents, Wash. 25, D.C.

NOTES: Forty-six page booklet, The Educator and the Atom, contains proceedings of symposium held Jan. 1960 for government and educational leaders under sponsorship of Baird-Atomic, Inc., Cambridge 38, Mass. It is available from BA on request.

Research Reactor Journal is new publication issued quarterly by AMF Atomics, Greenwich, Conn. It is to be devoted solely to the exchange of information among research reactor experimentalists.

Supplements to the Fa[illegible] Book on U.S. Nuclear Power Projects have been issued by Electric Companies Inform[illegible]n Program, 2 W. 45th St., New York 36.

REACTOR NEWS & RESEARCH NOTES...

NUCLEAR POWER FOR ROCKET PROPULSION: Nuclear reactor developed by Los Alamos Scientific laboratory, Kiwi-A3, was successfully operated last week in experimental work in connection with Project Rover. Its operation completed the first series of experiments in the current program at the USAEC's Nevada test site. The Rover program aims at space vehicles superior to present-day chemical rockets.

GRANT ASSISTS REACTOR RESEARCH: Grant of some $235,340 made to Massachusetts Institute of Technology by National Science Foundation will support additional research with the reactor at M.I.T. It is intended to use the grant to expand basic research in such areas as refinements in the theory of nuclear reactors. Auxiliary equipment which will be added to the reactor facilities under the NSF grant include a neutron diffraction spectrometer, a neutron "chopper" or beam interrupter; and a low-level "hot cell".

BRITISH THERMONUCLEAR FUSION RESEARCH PLANS CHANGED: Plans for constructing the Intermediate Current Stability Experiment (ICSE) have been abandoned by the U.K. Atomic Energy Authority. ICSE was to have been used for plasma physics research. Design studies indicated that the very large apparatus would cost about £3 million--twice the original estimate--or even more. The Authority decided that in the present state of plasma physics such an expenditure, plus the extensive manpower required, would be devoting more effort and resources to a single experiment than would be justified. It is proposed instead to broaden the fusion program with a number of smaller but important research experiments, improved methods of diagnostic measurements, and the further development of the advanced techniques needed to produce high-temperature plasmas.

RADIATION STUDIES ASSISTED BY GRANT: Grants to three international bodies by the Ford Foundation will enable their consideration of ionizing radiation problems independently of government policies. The bodies generally are dependent on government grants for funds. Largest grant in amount of $250,000 was made to International Commission on Radiological Protection. International Commission on Radiological Units and Measurements received $185,000 to assist in improving measurement of radiation received by living matter. To speed establishment of world-wide standards of radiation measurement, grant of $32,500 was made to the International Bureau of Weights and Measures.

ATOMIC ENERGY PATENT DIGEST...

PATENTS ISSUED October 11, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Radiochemical preparation of ion-exchange resins and soil conditioners. Donald A. Guthrie, Robert M. Thomas, inventors. No. 2,955,994 assigned to Esso Research & Engineering Co. (2) Solvents for radiochemical reactions. James F. Black, William C. Hollyday, Jr., Donald A. Guthrie, inventors. No. 2,955,995. (3) Detection and measurement of penetrative radiation. Fontaine C. Armistead, inventor. No. 2,956,162 assigned to Texaco Development Corp., New York, N.Y. (4) Nuclear spectroscopy well logging sonde. Paul E. Baker, inventor. No. 2,956,163 assigned to California Research Corp., San Francisco, Calif. (5) Airborne scintillation counter. James R. Ford, inventor. No. 2,956,164 assigned to Hycon Mfg. Co., Pasadena, Calif. (6) Borehole apparatus. Frank F. Johnson, inventor. No. 2,956,165 assigned to Schlumberger Well Surveying Corp., Houston, Texas.

PATENTS ISSUED October 11, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Fuel elements for nuclear reactor. James W. Kendall, Charles R. Tottle, inventors. No. 2,956,000 assigned to United Kingdom Atomic Energy Authority, London, England. (2) Separation of rare earths by solvent extraction. Donald F. Peppard, George W. Mason, inventors. No. 2,955,913 assigned to USAEC. (3) Oxidation resistant chromium alloy. James A. McGurty, John F. Collins, Vincent P. Calkins, inventors. No. 2,955,937 assigned to USAEC. (4) Irradiation method of converting organic compounds. Augustine O. Allen, James M. Caffrey, Jr., inventors. No. 2,955,997 assigned to USAEC. (5) Ion pulse generation. Rutledge F. King, Charles D. Moak, Vincent E. Parker, inventors. No. 2,956,169 assigned to USAEC. (6) Hollow carbon arc discharge. John S. Luce, inventor. No. 2,956,195 assigned to USAEC. (7) Particle accelerator and method of controlling the temperature. Richard B. Neal, William J. Gallagher, inventors. No. 2,956,201 assigned to USAEC.

PATENTS ISSUED October 18, 1960 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS: (1) Method of manufacturing pressure-sensitive adhesive tapes utilizing high-energy electron irradiation. James O. Hendricks, inventor. No. 2,956,904 assigned to Minnesota Mining & Manufacturing Co., St. Paul, Minn. (2) Radiation isomerization. Peter J. Lucchesi, Carl E. Heath, inventors. No. 2,956,940 assigned to Esso Research & Engineering Co. (3) Radiation isomerization process. Carl E. Heath, Peter J. Lucchesi, inventors. No. 2,956,941 assigned to Esso Research & Engineering Co. (4) Method for producing naphthenes. George D. Kittredge, inventor. No. 2,956,942 assigned to Phillips Petroleum Co. (5) Electron beam dosage monitoring. Alfred J. Gale, inventor. No. 2,957,078 assigned to High Voltage Engineering Corp., Burlington, Mass. (6) Penetrating ray emission coding. Rolf G. Edholm, inventor. No. 2,957,079 assigned to General Electric Co. (7) Radiation detector. Frederick W. Chapman, inventor. No. 2,957,081 assigned to General Motors Corp., Detroit, Mich. (8) Radioactivity well logging system. Serge A. Scherbatskoy, inventor. No. 2,957,083 assigned to PGAC Development Co., Houston, Texas. (9) Multi-element counter tube. Bernard Bernstein, inventor. No. 2,957,098 assigned to Nuclear Corp. of America, Inc., Denville, N.J. (10) Electromagnetic voltage generator. William W. Buechner, inventor. No. 2,957,094 assigned to High Voltage Engineering Corp., Burlington, Mass.

PATENTS ISSUED October 18, 1960 to GOVERNMENTAL ORGANIZATIONS: (1) Alpha air monitor. John D. Marr, William G. Cross, inventors. No. 2,957,084 assigned to Atomic Energy of Canada Ltd., Ottawa, Ontario, Canada. (2) Mass spectrometer improvements. William R. Shields, inventor. No. 2,956,771 assigned to USAEC.

PEOPLE...in nuclear work...

William S. Stringham has been appointed by The Martin Co. to supervise company activities at Quehanna, Pa., where Martin will carry out advanced development work in the field of isotopic power. Mr. Stringham had been with Goodyear Atomic Corp.

Earl A. Long has joined General Atomic division of General Dynamics Corp. as assistant director of GA's San Diego, Calif., laboratory.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

October 25, 1960